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EXAMINER	
BARANYAI, LAWRENCE	
ART UNIT	**PAPER NUMBER**
2665	6

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/656,868	VEENEMAN, DALE E.	
	Examiner	Art Unit	
	Lawrence Baranyai	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. An initialed and dated copy of Applicant's IDS form 1449, Paper No. 3, is attached to the instant Office action.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-10, 14, 17, 19-27, 31 and 36 are rejected under 35 U.S.C. 102(e) as anticipated over Liu et al. (US 6,266,395). Liu et al., in the analogous field of communications, teaches a method and apparatus for qualification of subscriber loops for xDSL services (col. 2 line 57 – col. 3 line 40). Regarding claims 1 and 17, Liu et al. teaches the use of a physical (topological) database for the subscriber loop which is provided from a carrier service provider database (fig. 1 106 and col. 6 lines 18 – 36). The equivalent loop circuit is determined for the subscriber loop (fig. 7-9) from the physical information database. The DSL performance (data rate or capacity) is determined for the equivalent loop and the DSL performance (data rate or capacity) is predicted from the equivalent loop (col. 7 line 5 – col. 11 line 26).

Regarding claim 36, Liu et al., in the analogous field of communications, teaches xDSL includes ADSL (col. 1 lines 18-26) and also teaches the apparatus and method can be applied to xDSL (col. 2 lines 45-47). Hence ADSL applications are supported.

This is equivalent to providing a method and system for predicting digital subscriber line (DSL) performance on an existing telephone loop, comprising: obtaining a topological description of the existing telephone loop; identifying an equivalent loop to the existing telephone loop from the topological description of the existing telephone loop; determining DSL performance for the equivalent loop; and predicting DSL performance for the existing telephone loop from the DSL performance for the equivalent loop (claims 1, 17); and to a method for predicting asymmetric digital subscriber line (ADSL) performance on an existing telephone loop, comprising: determining characteristics and operating conditions of the existing telephone loop; calculating ADSL capacity of the existing telephone loop based on the determined characteristics; identifying an equivalent loop based on the ADSL capacity and the determined operating conditions of the existing telephone loop; determining ADSL performance on the equivalent loop; and predicting ADSL performance on the existing telephone loop from the determined ADSL performance on the equivalent loop (claim 36).

Regarding claims 2 and 19, Liu et al., in the analogous field of communications discloses the database provides information including: frequency, length, gauge, temperature and insulation type associated with the subscriber loop (col. 6 lines 29-36, col. 8 line 6 – col. 9 line 18, col. 13 lines 25-30) as required by the claims.

Regarding claims 3 and 20, Liu et al., in the analogous field of communications discloses determining of an insertion loss (loop attenuation) based on topological description (col. 10 lines 28 - 58) as required by the claims.

Regarding claims 4 and 21, Liu et al., in the analogous field of communications discloses determining DSL capacity using the insertion loss (col. 10 lines 28 – 58) as required by the claims.

Regarding claims 5 and 22, Liu et al., in the analogous field of communications discloses creating a loss for a sub-channel, using this to generate SNR for each sub-channel and converting this to performance (bit rate). The overall bandwidth is obtained by summing the result. Summing a discrete set of values is equivalent to computing the area under the curve (col. 10 line 28 – col. 11 line 16). Since SNR is directly related to loss and summing equates to integration, this is equivalent to creating a loss curve using the insertion loss, and integrating the loss curve to determine the DSL capacity as required by the claims.

Regarding claims 6 and 23, Liu et al., in the analogous field of communications discloses creating a loss for each sub-channel frequency, using this to generate SNR for each sub-channel frequency and converting this to performance (bit rate). The overall bandwidth (DSL performance) is obtained by summing the result for each frequency. Summing a discrete set of values is equivalent to computing the area under the curve (col. 10 line 28 – col. 11 line 16). Since SNR is directly related to loss and summing equates to integration, this is equivalent to creating a loss curve based on the insertion loss over a plurality of frequencies, and determining an area below the loss

curve over the plurality of frequencies, the area corresponding to the DSL capacity of the existing telephone loop.

Regarding claims 7, 9, 24, and 26, Liu et al., in the analogous field of communications discloses the loop includes an upstream and downstream path and determines DSL capacity each for upstream and downstream paths (col. 7 line 55 – col. 8 line 5, col. 10 line 50 – col. 11 line 16) as required by the claims.

Regarding claims 8 and 25, Liu et al., in the analogous field of communications discloses determining DSL capacity form topological description of the loop (col. 8 line 6 – col. 10 line 58) as required by the claims.

Regarding claims 10 and 27, Liu et al., in the analogous field of communications discloses determining equivalent loops for upstream and downstream paths using R, L, G, and C parameters (col. 8 line 6 – 33) which are handled separately as indicated (col. 7 line 60 – col. 10 line 58).

Regarding claims 14 and 31, Liu et al., in the analogous field of communications discloses determining DSL performance for a number of DSL types (col. 2 line 45-47) and hence different types of rates are associated with different types of DSL services (ADSL, VDSL, SDSL, etc.) which is equivalent to selecting DSL performance data from a plurality of previously obtained DSL performance data.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art

are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 11, 28, and 35, are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 6,266,395), as applied to the claims above, and in further view of Bell Laboratories – Transmission Systems For Communications (U). Liu et al, in the analogous field of communications, teaches a method and apparatus for qualification of subscriber loops for xDSL services as noted above.

Liu et al., does not teach the use of equivalent straight cable for determining performance of a DSL system. Equivalent straight cable is useful to determine performance when, for example, a bridged tap is present in the subscriber loop. The conversion of a bridged tap circuit into an equivalent circuit without a bridge tap (i.e., straight cable circuit) is well known in the art of loop transmission design. The reference from Bell Laboratories, for example, teaches the method of converting such a cable circuit arrangement with bridge taps into an equivalent circuit without bridge taps, i.e., a straight cable circuit (p. 231-232 and figure 10-17).

This is equivalent to providing a method for estimating digital subscriber line (DSL) performance on a telephone line, comprising: identifying an equivalent straight cable that corresponds to the telephone line; determining DSL performance on the straight cable; and estimating DSL performance on the telephone line based on the determined DSL performance on the straight cable (claim 35) and wherein the

identifying includes: using the DSL capacity to identify the equivalent loop, the equivalent loop including a straight loop of a particular length (claims 11 and 28).

These features have the advantage of simplifying the modeling of a complex loop circuit. It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Bell Laboratories – Transmission Systems For Communications, to apply the conversion method from bridged tap loop cable circuit to a straight loop cable circuit to the methods and system of Liu et al., with the motivation to simplify the DSL performance estimation process.

3. Claim 11, 13, 28, 30 and 35, are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 6,266,395), as applied to the claims above, and in further view of Bell Laboratories – Transmission Systems For Communications (U). Liu et al, in the analogous field of communications, teaches a method and apparatus for qualification of subscriber loops for xDSL services in which DSL performance is determined based on the use of equivalent loop as noted above.

Liu et al., does not teach the use of equivalent straight cable for determining performance of a DSL system. Equivalent straight cable is useful to determine performance when, for example, a bridged tap is present in the subscriber loop. The conversion of a bridged tap circuit into an equivalent circuit without a bridge tap (i.e., straight cable circuit) is well known in the art of loop transmission design. The reference from Bell Laboratories, for example, teaches the method of converting such a cable circuit arrangement with bridge taps into an equivalent circuit without bridge taps, i.e., a straight cable circuit (p. 231-232 and figure 10-17).

This is equivalent to providing a method for estimating digital subscriber line (DSL) performance on a telephone line, comprising: identifying an equivalent straight cable that corresponds to the telephone line; determining DSL performance on the straight cable; and estimating DSL performance on the telephone line based on the determined DSL performance on the straight cable (claim 35) and wherein the identifying includes: using the DSL capacity to identify the equivalent loop, the equivalent loop including a straight loop of a particular length (claims 11 and 28) and determining the particular length of the straight loop from information regarding at least one of bridged taps, gauge, temperature, and insulation type associated with the existing telephone loop (claims 13, 30).

These features have the advantage of simplifying the modeling of a complex loop circuit. It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Bell Laboratories – Transmission Systems For Communications, to apply the conversion method from bridged tap loop cable circuit to a straight loop cable circuit to the method and apparatus of Liu et al., with the motivation to simplify the DSL performance estimation process.

4. Claims 15, 16, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 6,266,395) and Bell Laboratories – Transmission Systems For Communications as applied to the claims above, and in further view of Millbrandt (US 6,633,545). Liu et al, in the analogous field of communications, teaches a method and apparatus for qualification of subscriber loops for xDSL services as noted for the claims above. Bell Laboratories – Transmission Systems For Communications

teaches a method for converting bridged tap loops into straight loops as noted for the claims above.

Liu et al., and Bell Laboratories – Transmission Systems For Communications references do not teach the selecting DSL performance data under different cross talk and spectral density conditions. Millbrant, in the analogous field of communications, teaches a method and system for determining the data rate capacity of a DSL line which incorporates the effects of power spectral density and cross talk (col. 26 line 37 – col. 27 line 15).

This is equivalent to selecting DSL performance data from a plurality of DSL performance data for loops of different lengths under different cross talk conditions (claims 15, 32) and, determining spectral interference conditions associated with the existing telephone loop, and predicting the DSL performance of the existing telephone loop based on the DSL performance for the equivalent loop and the determined spectral interference conditions (claims 16, 33).

These features have the advantage of improving a supplier's ability to more accurately predict the DSL performance that the user can expect over a given subscriber loop. It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the data rate determining features of Millbrandt, to apply the PSD and cross talk features of Millbrandt to the method and system of Liu et al. and Bell Laboratories – Transmission Systems for Communications, with the motivation to provide better service to the customer.

5. Claims 12, 29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 6,266,395), Bell Laboratories – Transmission Systems for Communications, and Millbrandt, as applied to the claims above, and in further view of Tennyson (US 6,466,647). Liu et al, in the analogous field of communications, teaches a method and apparatus for qualification of subscriber loops for xDSL services as noted for the claims above. Bell Laboratories – Transmission Systems For Communications teaches a method for converting bridged tap loops into straight loops as noted for the claims above. Millbrandt teaches a method and system which includes the impact of PSD and cross talk as noted for the claims above.

Liu et al., Bell Laboratories – Transmission Systems for Communications, and Millbrandt do not teach the use of a computer readable medium and locating the DSL capacity (rate) in a table. Tennyson, in the analogous field of communications, teaches a method and system for determining the data rate capacity of a DSL line which includes a computer disk (col. 11 line 7-13) and table to store the data rate capacity (col. 11 lines 43-44 and col. 12 lines 44-50).

This is equivalent providing a computer-readable medium that stores instructions executable by one or more processors to perform a method for estimating digital subscriber line (DSL) performance on a customer telephone loop, comprising: instructions for determining operating conditions for the customer telephone loop; instructions for identifying a loop of a particular length that corresponds to the customer telephone loop operating under the determined operating conditions; instructions for determining DSL performance for the loop of the particular length; and instructions for

estimating DSL performance for the customer telephone loop from the DSL performance for the loop of the particular length (claim 34) and, locating the DSL capacity in a table, and finding the equivalent loop that corresponds to the DSL capacity in the table (claims 12, 29).

These features have the advantage of a computer readable medium and simple table lookup. It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the table lookup and computer readable medium features of Tennyson, to apply these features to the system and methods of Liu et al., Bell Laboratories – Transmission Systems for Communications, and Millbrant, with the motivation to provide simple computer-based implementation of the features.

Citation of Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Manica et al. (US 6,463,126) discloses a method for qualifying a loop for DSL service that includes many of the same features.

Examiner Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Baranyai whose telephone number is (703) 305-8707. The examiner can normally be reached on Monday-Thursday: 6:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9700.

Lb

HUY D. VU
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